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The survival and development of *Lycaeides argyrognomon* (Bergsträsser) (Lepidoptera: Lycaenidae) reared on ten different leguminous plants for searching the potential food plants

Keiko KODA[1], Eri OZAKI[2] and Hiroshi NAKAMURA[2]

[1] Institute Mountain Science, Shinshu University, Minamiminowa, Nagano, 399-4598 Japan
[2] Education and Research Center of Alpine Field Science, Faculty of Agriculture, Shinshu University, Minamiminowa, Nagano, 399-4598 Japan

Abstract Larvae of *Lycaeides argyrognomon* in Japan feed only on *Indigofera pseudo-tinctoria*. However, on the Eurasian Continent the same species feeds on many kinds of leguminous plants. Larvae of this butterfly were reared on different leguminous plants in June and July 2011 in an incubator at a constant temperature of 25°C with a photoperiod of 16L: 8D. The mortality and development of this species were examined, and the weight of the pupa and the length of the adult forewing were measured. The survival rates were 44.4% on *Glycine max* (leaf), 45.5% on *Vicia cracca*, 61.3% on *Vicia villosa* subsp. *varia* and 20.8% on *Trifolium repens*. The developmental period of females was longer than that of males on every plant. The mean pupal weight and mean forewing length ranged from 21.80 mg (male of *T. repens*) to 49.80 mg (female of *G. max* (leaf)) and from 10.00 mm (male of *T. repens*) to 13.75 mm (female of *G. max* (leaf)), respectively. Larvae which were given G. max (young soybean), *Vicia amoena*, *Lespedeza bicolor*, *Lespedeza cuneata* and *Trifolium pratense* started feeding, but did not develop to the adult stage. Larvae did not feed at all on *Phaseolus vulgaris* or *Albizia julibrissin*. *Lycaeides argyrognomon* of Japan is thus considered to have the potential to feed on leguminous plants other than *I. pseudo-tinctoria*.

Key words feeding plants, *Glycine max*, *Lycaeides argyrognomon*, rearing experiment, *Trifolium repens*, *Vicia cracca*, *Vicia villosa* subsp. *varia*.

Introduction

Lycaeides argyrognomon (Bergsträsser) is a grassland lycaenid butterfly which has been designated "vulnerable" (VU) by the Ministry of the Environment (2007). It is distributed in Japan, the Korean Peninsula, Northeastern China, Europe and North America (Shirozu, 2006). Large populations of this butterfly were once found throughout Nagano Prefecture, but its habitats have rapidly decreased in the northern part of the Prefecture.

Larvae of *L. argyrognomon praeterinsularis* in Japan feed only on *Indigofera pseudo-tinctoria* (Fukuda *et al.*, 1984). In contrast, it was reported that *L. argyrognomon ussuricus* distributed in Korea and Russia fed on *Vicia amurensis*, and the host plants of *L. argyrognomon argyrognomon* in Germany were *Astragalus glycyphyllos* and *Lotus corniculatus* (Takahashi, 2007). *Lycaeides argyrognomon*

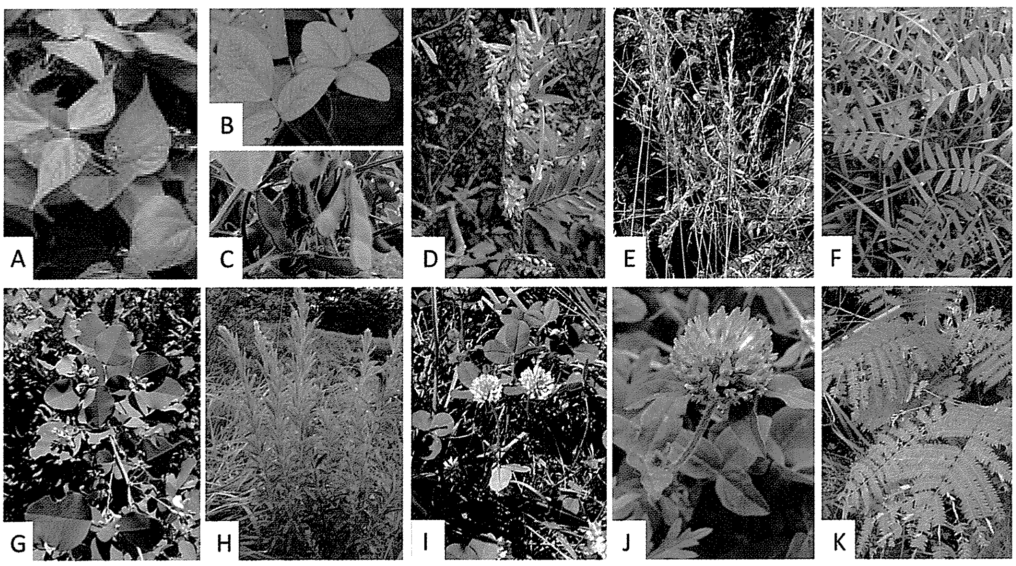

Fig. 1. Leguminous plants which were given to *Lycaeides argyrognomon* larvae in this study. A: *Phaseolus vulgaris*, B: *Glycine max* (leaf), C: *Glycine max* (young soybean), D: *Vicia cracca*, E: *Vicia villosa* subsp. *varia*, F: *Vicia amoena*, G: *Lespedeza bicolor*, H: *Lespedeza cuneata*, I: *Trifolium repens*, J: *Trifolium pratense*, K: *Albizia julibrissin*.

maracandicus in Kazakhstan is known to feed on *Astragalus* plants such as *A. sogotensis*, *A. brachilobus* and *A. laguriodes* (Gorbunov and Kosterin, 2003). These reports indicate that larvae of *L. argyrognomon* distributed on the Eurasian Continent feed on many kinds of leguminous plants.

In Japan, there have been some reports of *L. argyrognomon* feeding on plants other than *I. pseudo-tinctoria*:. Eggs and larvae of this butterfly were found on *Hedysarum vicioides* along the Mibu River, Nagano Prefecture (Entomological Society of Shinshu, 1976) and Nihira (2004) reported *H. vicioides* was the food plant of *L. argyrognomon*. Yago (2007) reared larvae on *Astragalus membranaceus* and *Glycine max* successfully. Koda and Nakamura (2011) reported that *L. argyrognomon* larvae could be reared on a Chinese *Indigofera* sp. successfully.

The objectives of this study were to confirm whether *L. argyrognomon* larvae reared on leguminous plants other than *I. pseudo-tinctoria* could develop to the adult stage and to compare the survival and development of this butterfly when reared on different leguminous plants for searching the potential feeding habits.

Materials and methods

Insects

Adult females of *L. argyrognomon* were collected at several spots along the Otagiri River in Komagane City, Nagano Prefecture, Japan, in June 2011. These females were put in a cylindrical cage (220 mm in diameter, 150 mm high) made of polyester cloth at room temperature with a photoperiod of 16L : 8D in the laboratory of the Faculty of Agriculture, Shinshu University, and fed sugar solution as nectar. In this study, we used eggs laid by these females from June 6 to June 10, 2011.

Plant species

We used 10 species of leguminous plants which were found around the habitat of *L. argyrognomon* in Nagano Prefecture (Fig.1). *Phaseolus vulgaris* and *G. max* (leaf) were cultivated at our campus. We used commercial *G. max* (young soybean) from Gunma Prefecture. *Vicia cracca*, *Vicia villosa* subsp. *varia* and *Lespedeza cuneata* were collected in Ina City. *Vicia amoena*, *Lespedeza bicolor*, *Trifolium repens*, *Trifolium pratense* and *Albizia julibrissin* were collected on the campus.

Rearing methods

Newly hatched larvae were reared on 10 different leguminous plants. The numbers of newly hatched larvae given each plant species are shown in Table 1. About 10 larvae were reared in a Petri dish (90 mm in diameter, 10 mm high) until the end of the second instar. The third instar larvae were reared in a large Petri dish (90 mm in diameter, 40 mm high). The fourth instar larvae were individually transferred to a large Petri dish. These Petri dishes were kept in an incubator at a constant temperature of 25°C with a photoperiod of 16L : 8D. Fresh leaves from the plants were given at intervals of two or three days. After pupation, each pupa was placed in a new Petri dish of the same size with a filter paper.

The mortality and development of the larvae and pupae were examined daily. The weight of each pupa was measured using an electronic chemical balance (Chyo JL-180) within one day after pupation, and the length of each adult forewing was measured using vernier calipers after the wings were spread on a setting board.

Statistical analysis

For statistical analysis, the larval and pupal periods, the weight of the pupae, and the length of the adult forewings were analyzed using two-way repeated measure analysis of variance ANOVA) and Scheffe's multiple comparisons. Survival rates were analyzed by two-sample test for equality of proportions.

Results

Survival ratio at larval and pupal stages

Table 1 shows the survival rates of the larval and pupal stages for individuals reared on different leguminous plants. Larvae reared on *P. vulgaris*, *G. max* (young soybean), *V. amoena*, *L. bicolor*, *L. cuneata*, *T. pratense* and *A. julibrissin* did not develop to the pupal stage. Some larvae reared on *G. max* (leaf), *V. cracca, V. villosa* subsp. *varia* and *T. repens* developed to the adult stage. The survival rates of the larval stage were 44.4% on *G. max* (leaf), 54.5% on *V. cracca*, 61.3% on *V. villosa* subsp. *varia* and 25.0% on *T. repens*. The survival ratio of the pupal stage was more than 80% on every plant.

Survival curves during larval stage

Fig. 2A shows the survival curves during the larval stage for individuals reared on *V. cracca*, *V. villosa* subsp. *varia*, *G. max* (leaf) and *T. repens*. High mortality was found to occur from 5 to 10 days after hatching. The fourth instar larvae feeding on these four food plants are shown in Fig. 3. Larvae which were given *G. max* (young soybean), *V. amoena*, *L. bicolor* and *T. pratense* succeeded in feeding to a certain extent but did not develop to the pupal stage. Larvae hardly fed at all on *P. vulgaris* or *A. julibrissin* (Fig. 2B). The first instar larvae that died on *L. bicolor* are shown in Fig. 4.

Table 1. The survival rates of the larval and pupal stages of *Lycaeides argyrognomon* reared on 10 different food plants.

Plant species	No.	Pupation ratio (%)	Adult emergence (%)
Phaseolus vulgaris	40	0.0	0.0
Glycine max (leaf)	18	44.4	44.4
Glycine max (young soybean)	19	0.0	0.0
Vicia cracca	22	54.5	45.5
Vicia villosa subsp. *varia*	31	61.3	61.3
Vicia amoena	30	0.0	0.0
Lespedeza bicolor	32	0.0	0.0
Lespedeza cuneata	26	0.0	0.0
Trifolium repens	24	25.0	20.8
Trifolium pratense	30	0.0	0.0
Albizia julibrissin	12	0.0	0.0

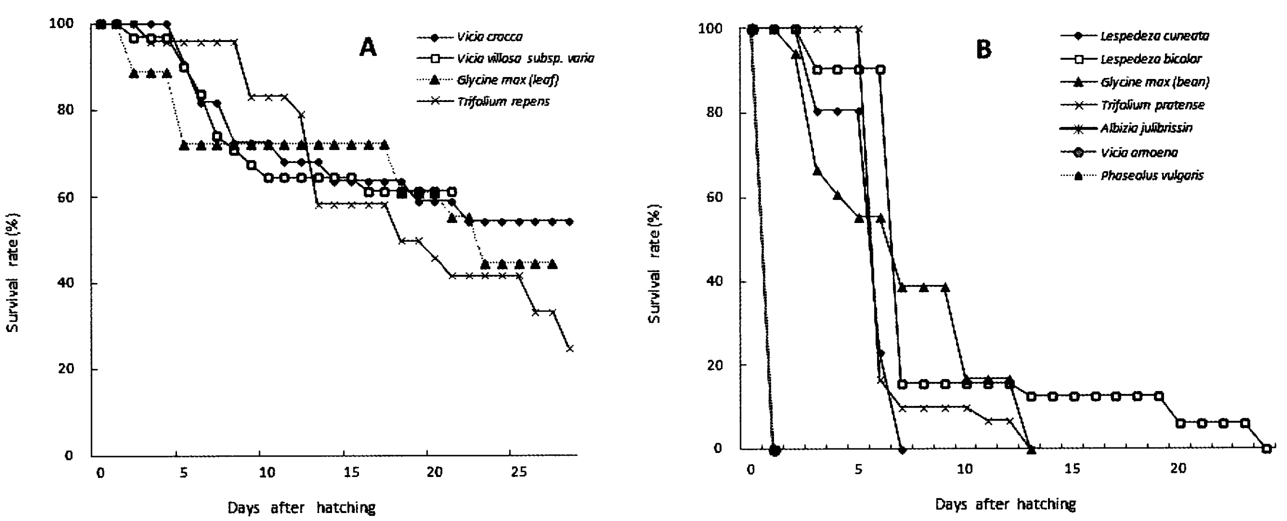

Fig. 2. Survival curves of the larval stage reared on different food plants.
A: Four plants on which larvae developed to the adult stage.
B: Seven plants on which larvae did not develop up to the adult stage.

Developmental periods of larval and pupal stages

The developmental periods of larvae and pupae reared on *G. max* (leaf), *V. cracca*, *V. villosa* subsp. *varia* and *T. repens* are summarized in Table 2. The developmental period of females was longer than that of males on every plant. The mean larval periods ranged from 17.9 days (males of *V. villosa* subsp. *varia*) to 24.5 days (females of *G. max* (leaf)). The mean pupal periods ranged from 6.8 days (males of *T. repens*) to 7.5 days (females of *V. villosa* subsp. *varia* and *G. max* (leaf)) (Table 2).

The results of two-way ANOVA for the two main factors of plant and sex and of Scheffe's multiple comparison for *G. max* (leaf), *V. cracca* and *V. villosa* subsp. *varia* are shown in Table 4. The data for *T. repens* were not used in this analysis because the number of samples was not sufficient. The larval periods of males and females showed a significant difference in two-way ANOVA (p<0.001), and the kind of plant was shown to affect the larval period in two-way ANOVA (p<0.001). The larval period of *V. villosa* subsp. *varia* (18.5 days) was significantly shorter than those of *V. cracca* (23.6 days) and *G. max* (leaf) (22.6 days) (Scheffe's multiple comparison, p<0.001) (Tables 2, 4). The interaction on the larval period between the two factors was not statistically significant (two-way ANOVA, p=0.287) (Table 4).

While the pupal periods of males and females showed a significant difference (two-way ANOVA, p=0.029),the difference in plant species did not affect the pupal period (two-way ANOVA, p=0.977). The interaction on the pupal period between the two factors was not statistically

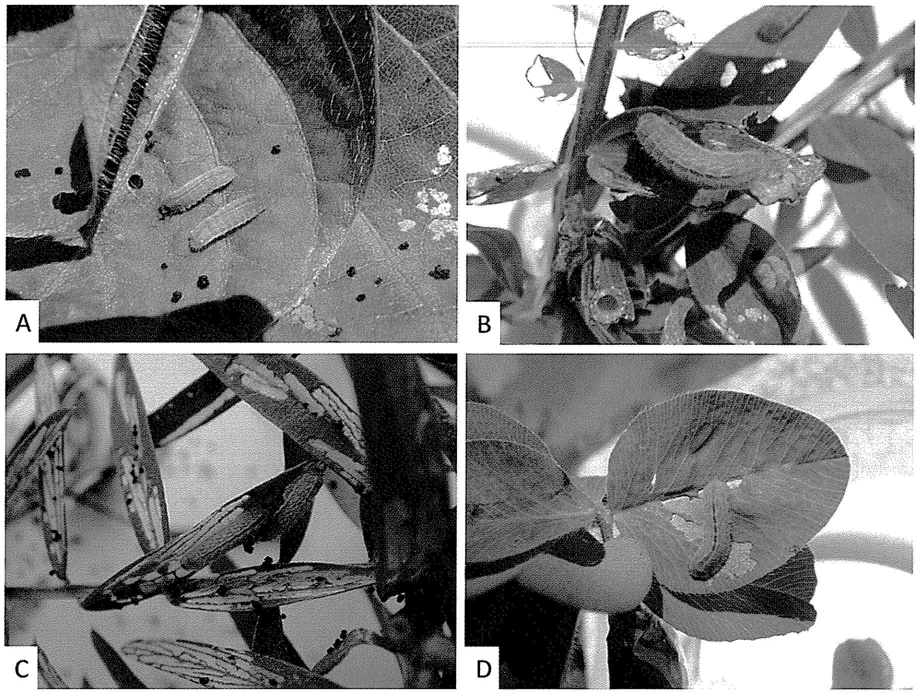

Fig. 3. Fourth instar larvae feeding on *Glycine max* (leaf) (A), *Vicia cracca* (B), *Vicia villosa* subsp. *varia* (C) and *Trifolium repens* (D).

Fig. 4. First instar larvae which successfully bite to *Lespedeza bicolor* but thereafter died. Red circles indicate larva.

significant (two-way ANOVA, p=0.784) (Table 4).

Weight of pupae and length of adult forewings

The weight of the pupae and the length of the adult forewings reared on *G. max* (leaf), *V. cracca*, *V. villosa* subsp. *varia* and *T. repens* are shown in Table 3. One abnormally large individual (pupal weight 85.8 mg, forewing length 15.8 mm) reared on *G. max* (leaf) was not included in the summary in Table 3. The mean pupal weight ranged from 21.8 mg (male of *T. repens*) to 49.8 mg (female of *G. max* (leaf)). The mean forewing length ranged from 10.0 mm (male of *T. repens*) to 13.8 mm (female of *G. max* (leaf)) (Table 3). The pupae of individuals reared on *T. repens* were lighter in weight and their adult

Table 2. Means of larval and pupal developmental periods of *Lycaeides argyrognomon* reared on *Glycine max* (leaf), *Vicia cracca*, *Vicia villosa* subsp. *varia*, *Trifolium repens* and *Indigofera pseudo-tinctoria* (Koda and Nakamura, 2011).

Plant species	Sex	No.	Mean ± SD (days)	
			Larval period	Pupal period
Glycine max (leaf)	♂	4	20.8 ± 1.3	7.0 ± 0.0
	♀	4	24.5 ± 2.9	7.5 ± 0.6
	Total	8	22.6 ± 2.9	7.3 ± 0.5
Vicia cracca	♂	5	23.2 ± 2.2	7.2 ± 0.8
	♀	5	24.0 ± 3.2	7.4 ± 0.6
	Total	10	23.6 ± 2.6	7.3 ± 0.7
Vicia villosa subsp. *varia*	♂	13	17.9 ± 1.2	7.1 ± 0.3
	♀	6	19.7 ± 1.5	7.5 ± 0.6
	Total	19	18.5 ± 1.5	7.2 ± 0.4
Trifolium repens	♂	4	21.8 ± 1.3	6.8 ± 0.3
	♀	1	23.0	7.0
	Total	5	22.0 ± 1.2	6.8 ± 0.5
Indigofera pseudo-tinctoria	♂	16	17.0 ± 0.7	7.5 ± 0.9
	♀	12	18.3 ± 0.9	8.2 ± 0.6
	Total	28	17.6 ± 1.1	7.8 ± 0.9

forewing length shorter than in individuals reared on the other three plants.

The results of two-way ANOVA using the two main factors of plant and sex and of Scheffe's multiple comparison for *G. max* (leaf), *V. cracca* and *V. villosa* subsp. *varia* are shown in Table 4. The data for *T. repens* were not used in this an alysis. The sex did not affect the pupal weight (two-way ANOVA, p=0.252) or the forewing length (two-way ANOVA, p=0.233) .

The means of the pupal weight and the forewing length showed significant differences among individuals reared on the three plants (two-way ANOVA, weight p=0.012, length p=0.001). The mean pupal weight of *G. max* (leaf) (47.8 mg) was significantly greater than that of *V. cracca* (38.6 mg), and there were significant differences in mean forewing length between *G. max* (leaf) (13.1 mm) and *V. cracca* (11.6 mm), and between *V. villosa* subsp. *varia* (12.4 mm) and *V. cracca* (Tables 3, 4).

Discussion

Lycaeides argyrognomon larvae in Japan mainly feed on *I. pseudo-tinctoria* (Fukuda *et al.*, 1984). However, in Europe and Central Asia, *L. argyrognomon* larvae have been known to feed on several leguminous plants (Takahashi, 2007). Takahashi (2007) pointed out that the potential feeding habits of *L. argyrognomon* in Japan could be determined in a rearing experiment using substitute plants. In this study, *L. argyrognomon* larvae were able to eat four kinds of plants (*G. max*, *V. cracca*, *V. villosa* subsp. *varia*, *T. repens*) in addition to *I. pseudo-tinctoria* and still develop to the adult stage (Table 1). It was previously reported that the use of *G. max* as a substitute food resulted in sufficient growth of *L. argyrognomon* larvae (Yago, 2007) and that *L. argyrognomon* in the North Caucasus was able to develop to the adult stage on *T. repens* (Takahashi, 2007). Moreover, eggs and larvae of *L. argyrognomon* ussuricus which is found in the Korean Peninsula, the Russian Maritime Province and the Khabarovsk district were found on the buds of *V. amurensisi* (Takahashi and Oshima, 2005). This study may clarify that *L. argyrognomon* of Japan has the potential to feed on leguminous plants that have been reported as host plants overseas.

The genus *Indigofera* is distributed over the Torrid Zone and the subtropical zone, and *I. pseudo-tinctoria* ranges from China to Japan, which is the northern limit of the distribution (Kitamura and Murata, 1980). However, Japan is the southern limit of the distribution of *L. argyrognomon* (Fukuda *et al.*, 1984). Takahashi (2007) emphasized that *L. argyrognomon* in Japan has converted from the usual host plants to *I. pseudo-tinctoria*. The present study suggests that his idea was correct.

In this study, the seven plants on which *L. argyrognomon* larvae did not develop to the adult stage can be classified into two groups based on traces of feeding (Fig. 4) and survival curves (Fig. 2B). The first group includes *P. vulgaris* and *A. julibrissin*. The larvae died without eating these plants at all. The second group consisted of *G. max* (young soybean), *V. amoena*, *L. bicolor*, *L. cuneata* and

Table 3. Means of the weight of the pupae and the length of the adult forewings of *Lycaeides argyrognomon* reared on *Glycine max* (leaf), *Vicia cracca*, *Vicia villosa* subsp. *varia*, *Trifolium repens* and *Indigofera pseudo-tinctoria* (Koda and Nakamura, 2011).

Plant species	Sex	Pupal weight		Length of adult forewing	
		No.	Mean ± SD (mg)	No.	Mean ± SD (mm)
Glycine max (leaf)	♂	4	46.4 ± 5.9	4	12.8 ± 0.9
	♀	3	49.8 ± 5.0	2	13.8 ± 0.4
	Total	7	47.8 ± 5.4	6	13.1 ± 0.8
Vicia cracca	♂	5	34.1 ± 5.9	4	11.4 ± 0.6
	♀	5	43.2 ± 10.3	4	11.7 ± 0.9
	Total	10	38.6 ± 9.3	8	11.6 ± 0.7
Vicia villosa subsp. varia	♂	13	43.7 ± 4.7	12	12.7 ± 0.4
	♀	6	42.8 ± 5.3	6	11.9 ± 0.7
	Total	19	43.4 ± 4.7	18	12.4 ± 0.6
Trifolium repens	♂	4	21.8 ± 4.6	4	10.0 ± 0.8
	♀	1	22.2	1	10.5
	Total	5	21.9 ± 4.0	5	10.1 ± 0.7
Indigofera pseudo-tinctoria	♂	16	51.7 ± 3.8	16	13.0 ± 0.4
	♀	12	53.3 ± 3.9	12	13.1 ± 0.6
	Total	28	52.4 ± 3.9	28	13.0 ± 0.5

T. pratense, on which larvae fed successfully for a certain period, but thereafter died (Fig. 2B).

Vicia amoena was reported to be a host plant of *P. idas verchojanicus* which is a species allied with *L. argyrognomon* (Takahashi, 2007). Takahashi (2007) reported that *L. argyrognomon* larvae in Japan could not eat *V. amurensis*, which was a host plant of *L. argyrognomon* in Korea and the Maritime Province of Siberia. However, *Vicia* species are distributed from the temperate zone to the subarctic zone of the northern hemisphere and South America (Satake *et al.*, 1982). Since these areas overlap with the distribution area of *L. argyrognomon*, this butterfly in Japan might always have been able to eat plants belonging to the genus *Vicia*. *Trifolium* species are distributed from the temperate zone to the subarctic zone of the northern hemisphere and the high mountain areas of the Torrid Zone and South America (Satake *et al.*, 1982). These areas overlap with the distribution area of *L. argyrognomon*, and we succeeded in rearing *L. argyrognomon* larvae on *T. repens* in this study (Table 1). So it can be said that this butterfly in Japan always had the potential to feed on plants of the genus *Trifolium*, which are similar to *Vicia* species.

The distribution areas of *Lespedeza* species are from East Asia to the Himalayas and North America (Satake *et al.*, 1982). These do not overlap with that of *L. argyrognomon*. It has been known that *L. bicolor* is a host plant of *Everes argiades* and *Eurema mandarina*, and the larvae of *E. argiades*, *Zizina otis* and *Lampides boeticus* feed on *L. cuneata* (Fukuda *et al.*, 1984). Generally, insects which feed on a specific plant may react to the characteristic ingredients of the plant (Hidaka *et al.*, 1999). The existence of a feeding stimulant, such as glucosinolate in the case of the *Pieris* butterfly (Renwick and Lopez, 1999), is considered to be necessary for larvae to eat the plant. Pinitol contained in *L. cuneata* has been known to be a feeding stimulant of *E. mandarina* (Numata *et al.*, 1985). The reason that *L. argyrognomon* larvae fed for a while in this study may be that the larvae reacted to a feeding stimulant present in the two *Lespedeza* plants.

The survival rate, developmental periods, pupal weight and forewing length of individuals reared on *G. max* (leaf), *V. cracca*, *V. villosa* subsp. *varia* and *T. repens* were compared with those reared on *I. pseudo-tinctoria* (Koda and Nakamura, 2011). The survival rate of larvae reared on *I. pseudo-tinctoria* was 67.4%, which was higher than that of larvae reared on the four plants used in this study. However, there was a significant difference only between *T. repens* and *I. pseudo-tinctoria* (two-sample test for equality of proportions, p=0.001). The developmental period of larvae reared on *I. pseudo-tinctoria* was shorter than those of larvae reared on other plants. The pupal weight and forewing length of individuals reared on *I. pseudo-tinctoria* were heavier and longer than those of individuals reared on other plants. Honda and Kato (2005) mentioned that the host plant which has been used most frequently in the area has attained the highest fitness for the species. It may be said that this study provides some confirmation of this idea.

There are some reports that endangered species have expanded their distribution area by means of host conversion

Table 4. Two-way ANOVA table and Sheffe's multiple comparison for the larval and pupal developmental periods, pupal weight and adult forewing length of *Lycaeides argyrognomon* reared on *Glycine max* (leaf) (GM), *Vicia cracca* (VC) and *Vicia villosa* subsp. *varia* (VV).

Variables measured	Two-way ANOVA			Sheffe's multiple comparison		
	Source of variation	*F*	*p*-value	Means compared	Difference of means	*p*-value
Larval period	Sex	17.774	<0.001*	♂ × ♀	-2.763	<0.001*
	Food plant	22.430	<0.001*	VC × VV	5.126	<0.001*
				VC × GM	0.975	0.582
				VV × GM	-4.515	<0.001*
	Interaction	1.300	0.287			
Pupal period	Sex	5.259	0.029*	♂ × ♀	-0.376	0.029*
	Food plant	0.023	0.977	VC × VV	0.089	0.897
				VC × GM	0.050	0.977
				VV × GM	-0.039	0.982
	Interaction	0.245	0.784			
Pupal weight	Sex	1.363	0.252	♂ × ♀	-0.002	0.252
	Food plant	5.149	0.012*	VC × VV	-0.005	0.150
				VC × GM	-0.009	0.017*
				VV × GM	-0.004	0.274
	Interaction	2.105	0.140			
Length of adult forewing	Sex	1.490	0.233	♂ × ♀	0.283	0.233
	Food plant	10.074	0.001*	VC × VV	-0.847	0.015*
				VC × GM	-1.558	0.001*
				VV × GM	-0.711	0.078
	Interaction	4.091	0.029*			

*: Significant difference at the level of 5 %.

from native plants to naturalized plants. Larvae of *Eurema laeta* were considered for a long time to feed only on *Chamaecrista nomame* in Japan (Shirozu, 2006). As *E. laeta* disappeared from many habitats along with a decrease of *C. nomame*, it was designated "vulnerable" (VU) by the Ministry of the Environment (2007). However, recently it was reported that the populations of *E. laeta* in Shizuoka, Aichi and Gifu Prefectures have increased because of host conversion from *C. nomame* to *Chamaecrista nictitans*, which is a naturalized plant (Ueyama, 2009). It is known that the population of *Z. otis*, a threatened butterfly in Japan, increased in Osaka and Hyogo Prefectures by means of host conversion from *Lotus corniculatus* to *T. repens* (Ishii et al., 2008).

Koda and Nakamura (2011) reported that *L. argyrognomon* could develop sufficiently to the adult stage when reared on a Chinese *Indigofera* sp., which was used for the revegetation of roadside slopes. *Vicia villosa* subsp. *varia* on which *L. argyrognomon* larvae fed and developed to the adult stage in this study, is an immigrant plant (Uyemura *et al.*, 2010). This suggests that *L. argyrognomon* may change its host plant to one of several leguminous plants including immigrants such as the Chinese *Indigofera* sp. and *V. villosa* subsp. *varia*. However, there has been no report that larvae of this butterfly use plants other than *I. pseudo-tinctoria* in the field. It has been said that the host plant of larvae is mainly determined by the oviposition preference of the female butterfly (Dethier, 1941). It is necessary to investigate whether the female *L. argyrognomon* lays eggs on plants other than *I. pseudo-tinctoria*.

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摘　要

潜在的食草を探るために10種のマメ科植物で飼育したミヤマシジミの生存と発育について（江田慧子・尾崎絵理・中村寛志）

日本に生息しているミヤマシジミの食草はコマツナギであるが，海外に生息するミヤマシジミはコマツナギ以外の植物を利用している．本研究は潜在的食草を探るために，2011年6～7月に，ミヤマシジミ幼虫に生息地の周辺でみられた10種のマメ科植物を与えて室内飼育を行った．幼虫は25°C，16L: 8Dの恒温器で成虫まで飼育し，生存率，発育期間，蛹体重，前翅長を調べた．その結果、生存率はダイズの葉で44.4%，クサフジで45.5%，ナヨクサフジで61.3%，シロツメクサで20.8%であった．メスの発育期間は全ての食草でオスより長かった．蛹の平均体重の最小は21.80 mg（シロツメクサ食のオス）で，最大は49.80 mg（ダイズの葉食のメス），また前翅の平均長の最小は10.00 mm（シロツメクサ食のオス）で，最大は13.75 mm（ダイズの葉食のメス）であった．ダイズの実、ツルフジバカマ，ヤマハギ，メドハギ，アカツメクサを与えた幼虫は，少し摂食したがすべて死亡した．インゲンマメとネムノキは全く摂食しなかった．これより日本産ミヤマシジミは，コマツナギ以外のマメ科植物を食草とする潜在的な摂食習性を持っていると考えられた．

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